

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property  
Organization  
International Bureau



(43) International Publication Date  
8 April 2004 (08.04.2004)

PCT

(10) International Publication Number  
WO 2004/029989 A1

(51) International Patent Classification<sup>7</sup>: G21C 19/46, G21F 9/30

(21) International Application Number:  
PCT/GB2003/004097

(22) International Filing Date:  
26 September 2003 (26.09.2003)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:  
0222475.6 27 September 2002 (27.09.2002) GB

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(81) Designated States (national): AE, AG, AL, AM, AT, AU,  
AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU,  
CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE,  
GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR,  
KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK,  
MN, MW, MX, MZ, NL, NO, NZ, OM, PG, PH, PL, PT,  
RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR,  
TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (regional): ARIPO patent (GH, GM,  
KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW),  
Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),  
European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE,  
ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO,  
SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM,  
GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

- with international search report
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

WO 2004/029989 A1

(54) Title: PROCESS FOR THE DISSOLUTION OF ACTINIC OXIDES

(57) **Abstract:** The invention provides a process for dissolving actinic oxides, the process comprising performing the steps of (a) introducing the actinic oxides into a solution of nitric acid; (b) treating the acidic solution in order to substantially remove palladium; and (c) treating with divalent silver. Preferably, the actinic oxides are comprised in spent nuclear fuel. Optionally, the process comprises a second treatment of the acidic solution in order to substantially remove palladium and a second treatment with divalent silver. The steps may be performed on a batchwise or continuous basis. The treatment to remove palladium is preferably carried out by solvent extraction or ion exchange, and provides greatly improved rates of dissolution of oxides of plutonium. The treatment with divalent silver preferably involves the addition of a source of monovalent silver, followed by an electrolysis treatment to generate divalent silver.